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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,972	03/19/2002	Shunpei Yamazaki	740756-2457	5505
31780	7590	02/16/2006	EXAMINER	
ERIC ROBINSON PMB 955 21010 SOUTHBANK ST. POTOMAC FALLS, VA 20165			DEO, DUY VU NGUYEN	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,972

Applicant(s)

YAMAZAKI ET AL.

Examiner

DuyVu n. Deo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-14, 21-29 and 37-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-14, 21, 22, 24, 25 and 37-46 is/are allowed.
- 6) ☒ Claim(s) 23, 26-29 and 47-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/1/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 23, 27, 29, 47, 48, 50, 52, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,440,865), Wolf (Silicon Processing for the VLSI Era), Ouellet (US 5,747,361).

Lee describes a method for metal etching comprising: forming a Ti layer 34 (claimed 1st conductive), forming a Al alloy layer 38 (claimed 2nd conductive layer) on the Ti layer; forming a TiN layer (claimed third conductive layer) 40 on the Al alloy layer (col. 2, line 45-60); patterning the Ti, Al alloy, and the TiN to form a conductive layer with a taper portion (col. 3, line 1-25). Unlike claimed invention, Lee doesn't describe subjecting the conductive layer with a taper portion to a plasma treatment. However, figures 4 and 5 show that the resist has to be removed in order to form the layer 44 and Wolf shows that the conventional resist stripper includes subjecting the resist, and the conductive layer since it is exposed by the resist layer, to an oxygen plasma (page 518). Therefore, it would have been obvious for one skill in the art to remove the resist in light of Wolf's teaching because Wolf further describes a method to remove the resist that is silent in Lee in order to clear the resist for the next step.

Unlike claimed invention, Lee doesn't describe fluorine containing gas is used as etching gas for etching at least the first conductive layer Ti. Ouellet teaches a method for etching

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material including Ti and W using fluorine containing gas and TiW/Al with fluorine containing gas (col. 1, line 52-57). It would have been obvious for one skilled in the art to etch materials such as above Ti (claimed first conductive layer) layer and W layer in light of Ouellet because he teaches that using fluorine containing gas is much easier and does not require extensive sputtering (col. 1, line 52-55).

Referring to claim 47, since the conductive layers made up of metals and exposed to oxygen plasma during resist stripping, they would be oxidized.

3. Claims 26, 28, 49, 51, 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, Ouellet and Wolf as applied to claim 23 above, and further in view of Colgan et al. (US 5,912,506).

Referring to claims 26, 28, Lee doesn't suggest the first conductive layer comprises of W or Mo and the third conductive layer comprises of Ti. Colgan describes different structures that having a first layer of Mo or W, the second layer of Al, and the third layer of Ti (col. 3, line 5-52). Therefore, it would have been obvious for one skilled in the art at the time of the invention to use other type of materials, depending on the type of device being manufactured, such as one suggested by Colgan in order to form a TFT structure with a reasonable expectation of success.

Allowable Subject Matter

4. Claims 7-22, 24, 25, 37-46 remained allowed.

Response to Arguments

5. Applicant's arguments with respect to claims 23, 26-29, 47 have been considered but are moot in view of the new ground(s) of rejection.

Referring to applicant's argument that fluorine containing etching gas is not effective to etch aluminum; therefore, the use of fluorine containing etching for either step of Lee would not be effective and would destroy the function of Lee is found unpersuasive because there is no such teaching in Lee and Lee also doesn't teach against using fluorine containing gas.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-2:30 Mon-Fri.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner
Duy-Vu N. Deo
2/15/06

